CLAIMS

What is claimed is:

1.   A method, comprising:

selecting an area of a displayed parametric object living in three dimensional or higher space; and

painting a brush directly onto a surface of the area.

2.   A method as recited in claim 1, wherein the painting is performed view independently.

3.   A method as recited in claim 1, wherein the painting first aligns the brush to a normal vector of the surface.

4.   A method as recited in claim 1, wherein the painting is performed without first painting the brush on a two dimensional texture space corresponding to the object.

5.   A method as recited in claim 1, wherein the selecting further comprises converting a selected two dimensional screen coordinate into a three dimensional world coordinate.

6.   A method as recited in claim 5, wherein the selecting further comprises identifying an intersection point by intersecting a vector comprising the three dimensional world coordinate and a viewing direction, and the object.

7.   A method as recited in claim 6, wherein the painting further comprises:

computing a tangent plane by computing a normal vector at the intersection point; and

projecting the brush on the three dimensional surface of the selected area using the tangent plane.

8.   A method as recited in claim 1, wherein the normal vector comprises an interpolated normal vector.

9.   A method as recited in claim 1, wherein the painting further comprises:

computing a tangent plane by computing a normal vector at an intersection point where the brush is applied; and

projecting the brush on the surface of the selected area using the tangent plane.

10.   A method as recited in claim 9, wherein the normal vector comprises an interpolated normal vector.

11.   A method as recited in claim 1, wherein the brush is two dimensional.

12.   A method as recited in claim 1, wherein the brush is three dimensional.

13.   A method as recited in claim 12, wherein the brush is cylindrical with a defined depth.

14.   A method as recited in claim 1, wherein an intensity of portions of a brush painting varies based on a normal vector of respective portions of the surface.

15.   A method as recited in claim 1, wherein the painting stops beyond a portion of the surface with a normal vector which varies more than a predetermined angle from an intersection point normal.

16.   A method as recited in claim 13, wherein the predetermined angle is 90 degrees.

17.   A method as recited in claim 1, wherein the painting stops beyond a portion of the surface when a distance from the brush to the portion of the surface is greater than a predetermined threshold.

18.   A method as recited in claim 1, wherein before the painting, the brush is rotated in a brush stroke direction.

19.   A method as recited in claim 1, wherein before the painting, a brush resolution for the brush is determined and applied.

20.   A method for processing overscanning, comprising:

starting with a first grid comprising a plurality of first pixels, the first pixels each comprising background and non background pixels;

creating a subsequent grid, smaller than the first grid, the subsequent grid comprising a plurality of subsequent pixels each corresponding to a plurality of first pixels, each subsequent pixel determined by averaging the subsequent pixel's corresponding first pixels which are non background pixels; and

assigning first pixels in the first grid which are background pixels to a corresponding determined subsequent pixel.

21.   A method as recited in claim 20, wherein if the subsequent grid comprises a background pixel, then the creating operation is repeated creating a new subsequent grid(s) until the new subsequent grid does not contain a background pixel, and then the assigning is performed iteratively in reverse for each subsequent grid.

22.   A method of implementing an effect brush, comprising:

selecting a selected area of a displayed parametric object living in three dimensional or higher space;

reverse projecting texture from a surface of the selected area onto a temporary brush, processing the temporary brush using a selected process, and projecting the temporary brush onto the surface of the selected area.

23.   A method as recited in claim 22, wherein the selected process uses a particular filter.

24.   A method as recited in claim 22, wherein the selected process uses a particular brush.

25.   A method as recited in claim 24, wherein the particular brush is selected based on a determination of an appropriate brush resolution.

26.   A method for changing a brush resolution, comprising:

comparing a current brush resolution of a current brush with a texture resolution; and

replacing, if the current brush resolution does not meet a predetermined criteria for painting on the texture resolution, the current brush with a new brush having a new resolution.

27.   A method as recited in claim 26, wherein the predetermined criteria comprises whether the current brush resolution is greater or equal to the texture resolution, and if not, then the new resolution is selected to match the texture resolution.

28.   A method of painting on a parametric object living in three dimensional or higher space, comprising:

determining a point on a surface of the object where paint is to be applied;

producing a tangent space brush for the point; and

applying the paint to the object using the brush.

29.   A method as recited in claim 28, where in the producing comprises:

determining a normal to the surface at the point;

determining a radius and a depth of the brush in a plane tangent to the surface at the point; and

wherein the applying comprises:

bringing the brush and the surface into coincidence along the normal;

determining portions of the object intersected by the brush using the depth and the radius;

applying paint to corresponding portions of object texture in texture space; and

applying the texture to the object.

30.   A method as recited in claim 29, wherein the normal is an interpolated normal.

31.   A method of painting on a parametric object living in three dimensional or higher space, comprising:

defining a series of points on the parameterized object representing a stroke;

positioning and orienting a brush stamp for each point in the series of points in a view independent manner; and

painting the stroke into an object texture as a collection of texture modifications using the brush stamp for each point.

32.   A method as recited in claim 1, further comprising compiling images produced by the painting into a movie.

33.   A movie made incorporating images created by using the following process:

selecting an area of a displayed parametric object living in three dimensional or higher space; and

painting a brush directly onto a surface of the area.

34.   A computer readable storage controlling a computer by

allowing a user to select an area of a displayed parametric object living in three dimensional or higher space; and

painting a brush directly onto a surface of the area.

35.   An apparatus, comprising:

a selecting unit selecting an area of a displayed parametric object living in three dimensional or higher space; and

a painting unit painting a brush directly onto a surface of the area.

36.   A method, comprising:

selecting an area of a displayed parametric object living in three dimensional or higher space;

painting a brush directly onto a surface of the area;

converting a selected two dimensional screen coordinate into a three dimensional world coordinate;

identifying an intersection point by intersecting a vector comprising the three dimensional world coordinate and a viewing direction, and the object;

computing a tangent plane by computing a normal vector at the intersection point; and

projecting the brush on the three dimensional surface of the selected area using the tangent plane,

wherein the painting is performed view independently,

wherein the painting first aligns the brush to a normal vector of the surface,

wherein the painting is performed without first painting the brush on a two dimensional texture space corresponding to the object,

wherein the normal vector comprises an interpolated normal vector,

wherein an intensity of portions of a brush painting varies based on a normal vector of respective portions of the surface,

wherein the painting stops beyond a portion of the surface with a normal vector which varies more than a predetermined angle from an intersection point normal,

wherein the painting stops beyond a portion of the surface when a distance from the brush to the portion of the surface is greater than a predetermined threshold.